

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of manufacturing a semiconductor device, comprising:

supplying one reactant to a substrate;

supplying ~~the~~ an other reactant to the substrate; and

processing the substrate by alternately repeating the above steps for a plurality of times,

wherein both or either of the reactants contains a source gas obtained by vaporizing a liquid source in a vaporization section,

an injecting amount per one injecting operation of the liquid source to the vaporization section is fixed to be smaller than an amount of the liquid source required for one supply operation of the source gas to the substrate, and

the liquid source is controlled to be intermittently injected to the vaporization section and the amount of the liquid source required for the one supply operation is controlled by the number of injection of the injecting operation.

~~a flow rate of the liquid source to the vaporization section per one injecting operation is fixed, and the liquid source is controlled to be intermittently injected to the vaporization section.~~

2-3. (Cancelled)

4. (Original) The method of manufacturing a semiconductor device according to claim 1, wherein the process of the step of processing the substrate is an ALD processing to form a film with a desired thickness by conducting a control of repeating for a plurality of times the steps of:

supplying the one reactant to the substrate so as to be adsorbed thereon; and
supplying the other reactant to the reactant thus adsorbed on the substrate to
cause reaction, thereby forming a film.

5. (Currently Amended) A substrate processing apparatus, comprising:
a processing chamber for processing a substrate;
a container for containing a liquid source;
a vaporizer having a vaporization section for vaporizing the liquid source;
a liquid source supply pipe for supplying the liquid source contained in the
container to the vaporizer;
a source gas supply pipe for supplying the source gas obtained by vaporizing
in the vaporizer into the processing chamber;
an injection drive control mechanism for controlling so that an injection
amount per one injecting operation of the liquid source to the vaporization section is fixed to
be smaller than an amount of the liquid source required for one supply operation of the source
gas vaporized at the vaporization section to the substrate, and the liquid source is
intermittently injected to the vaporization section and the amount of the liquid source
required for the one supply operation is controlled by the number of injection operation; so as
to fix a flow rate of the liquid source to the vaporization section per one injecting operation,
and intermittently inject the liquid source to the vaporization section;
a supply pipe for supplying a reactant different from the source gas into the
processing chamber; and
a controller for controlling so as to repeat the supply of the source gas to the
processing chamber and the supply of the reactant ~~different from the source gas~~ to the
processing chamber, alternately for a plurality of times.

6-7. (Cancelled)

8. (Currently Amended) The substrate processing apparatus according to claim 5, wherein the controller ~~further~~ has a function to control so that the source gas is supplied into the processing chamber and is absorbed on the substrate, then the reactant is supplied into the processing chamber and is allowed to cause reaction with the source gas absorbed on the substrate to form a film, and by repeating these steps for a plurality of times, film deposition is performed on the substrate by an ALD process. ~~as to deposit on the substrate by using an ALD, by repeating for a plurality of times a step of supplying one reactant to the substrate to be adsorbed thereon, and a step of forming a film by supplying other reactant to the reactant already adsorbed on the substrate so as to be reacted thereon.~~

9. (Currently Amended) The substrate processing apparatus according to claim 5, wherein the controller further has a function to previously measure the correlation between a pressure for feeding the liquid source to the vaporization section and the flow rate injecting amount of the liquid source per one injecting operation to the vaporization section, and correct the flow rate injecting amount per one injecting operation based on the correlation thus obtained.

10. (Currently Amended) The substrate processing apparatus according to claim 5, wherein a liquid flow meter is provided between the vaporization section and the container, and ~~an~~ the injection drive control mechanism ~~having~~ has a flow rate adjusting mechanism electrically connected to the liquid flow meter ~~is installed~~, and the ~~flow rate adjusting mechanism has a controller that~~ calculates an integrated flow rate of a certain time period or a certain constant number of injection based on an electrical signal from the liquid flow meter, monitors the integrated flow rate thus obtained with passage of time, and adjusts a change in the flow rate injecting amount to the vaporization section per one injecting operation with passage of time by the flow rate adjusting mechanism.

11. (Currently Amended) The substrate processing apparatus according to claim 5, wherein the vaporizer is constituted as an injection type vaporizer integrally comprising the vaporization section ~~for vaporizing the liquid source~~, a flow passage for feeding the liquid source to the vaporization section, and a valve element for controlling the injection/non-injection of the liquid source to the vaporization section by opening/closing the valve, and controlling the flow rate of the liquid source fed to the flow passage at controlling the valve to open by adjusting an opening degree of the valve, wherein the adjustment of the opening degree and opening/closing of the valve element is performed by the injection drive control mechanism.

12. (New) The method of manufacturing a semiconductor device according to claim 1, wherein the step of processing the substrate includes the step of supplying said one reactant to the substrate, the step of removing extra of said one reactant, the step of supplying said other reactant to the substrate, and the step of removing extra of said other reactant, as one cycle, and this cycle is repeated for a plurality of times.

13. (New) A method of manufacturing a semiconductor device, comprising the steps of:

supplying a source gas obtained by vaporizing a liquid source by a vaporization section to a substrate;

supplying a reactant different from the source gas to the substrate; and

processing the substrate by repeating these steps for a plurality of times,

wherein an injecting amount per one injecting operation of the liquid source to the vaporization section is fixed to be smaller than an amount of the liquid source required for one supply operation of the source gas to the substrate, and the liquid source is controlled to be intermittently injected to the vaporization section and the amount of the liquid source

required for the one supply operation is controlled by the number of injection of the injecting operation.

14. (New) The method of manufacturing a semiconductor device according to claim 13, wherein the step of processing the substrate includes the step of supplying said source gas to the substrate, the step of removing extra of said source gas, the step of supplying said reactant to the substrate, and the step of removing extra of said reactant as one cycle, and this cycle is repeated for a plurality of times.